

National Pollutant Discharge Elimination System (NPDES) Permit Program

FACT SHEET

Regarding an NPDES Permit To Discharge to Waters of the State of Ohio for  
**Energy Harbor Perry Nuclear Power Plant**

Public Notice No.: 186540  
Public Notice Date: July 24, 2023  
Comment Period Ends: August 23, 2023

Ohio EPA Permit No.: **3IB00016\*MD**  
Application No.: **OH0063461**

Name and Address of Applicant:

**Energy Harbor Nuclear Corporation  
Perry Nuclear Power Plant  
10 Center Road  
Perry, OH 44081**

Name and Address of Facility Where  
Discharge Occurs:

**Perry Nuclear Power Plant  
10 Center Road  
Perry, OH 44081  
Lake County**

Receiving Water: **Lake Erie**

Subsequent Stream Network: **N/A**

**INTRODUCTION**

Development of a Fact Sheet for NPDES permits is mandated by Title 40 of the Code of Federal Regulations (CFR), Section 124.8 and 124.56. This document fulfills the requirements established in those regulations by providing the information necessary to inform the public of actions proposed by the Ohio Environmental Protection Agency (Ohio EPA), as well as the methods by which the public can participate in the process of finalizing those actions.

This Fact Sheet is prepared in order to document the technical basis and risk management decisions that are considered in the determination of water quality based NPDES Permit effluent limitations. The technical basis for the Fact Sheet may consist of evaluations of promulgated effluent guidelines, existing effluent quality, instream biological, chemical and physical conditions, and the relative risk of alternative effluent limitations. This Fact Sheet details the discretionary decision-making process empowered to the Director by the Clean Water Act (CWA) and Ohio Water Pollution Control Law (Ohio Revised Code [ORC] 6111). Decisions to award variances to Water Quality Standards (WQS) or promulgated effluent guidelines for economic or technological reasons will also be justified in the Fact Sheet where necessary.

Antidegradation provisions in Ohio Administrative Code (OAC) Chapter 3745-1 describe the conditions under which water quality may be lowered in surface waters. No antidegradation review was necessary.

Effluent limits based on available treatment technologies are required by Section 301(b) of the CWA. Many of these have already been established by the United States Environmental Protection Agency (U.S. EPA) in the effluent guideline regulations (a.k.a. categorical regulations) for industry categories in 40 CFR Parts 405-499. Technology-based regulations for publicly-owned treatment works are listed in the Secondary Treatment Regulations (40 CFR Part 133). If regulations have not been established for a category of dischargers, the director may establish technology-based limits based on best professional judgment (BPJ).

Ohio EPA reviews the need for water-quality-based limits on a pollutant-by-pollutant basis. Wasteload allocations (WLAs) are used to develop these limits based on the pollutants that have been detected in the discharge, and the receiving water's assimilative capacity. The assimilative capacity depends on the flow in the water receiving the

discharge, and the concentration of the pollutant upstream. The greater the upstream flow, and the lower the upstream concentration, the greater the assimilative capacity is. Assimilative capacity may represent dilution (as in allocations for metals), or it may also incorporate the break-down of pollutants in the receiving water (as in allocations for oxygen-demanding materials).

The need for water-quality-based limits is determined by comparing the WLA for a pollutant to a measure of the effluent quality. The measure of effluent quality is called Projected Effluent Quality (PEQ). This is a statistical measure of the average and maximum effluent values for a pollutant. As with any statistical method, the more data that exists for a given pollutant, the more likely that PEQ will match the actual observed data. If there is a small data set for a given pollutant, the highest measured value is multiplied by a statistical factor to obtain a PEQ; for example if only one sample exists, the factor is 6.2, for two samples - 3.8, for three samples - 3.0. The factors continue to decline as samples sizes increase. These factors are intended to account for effluent variability, but if the pollutant concentrations are fairly constant, these factors may make PEQ appear larger than it would be shown to be if more sample results existed.

## **SUMMARY OF PERMIT CONDITIONS**

The effluent limits and/or monitoring requirements proposed for all parameters are the same as in the current permit, except those listed below.

The reasonable potential analysis placed mercury in Group 5. As such, the 30-day average variance-based limit is proposed to decrease in accordance with the data presented as part of the facility's mercury variance renewal request. The monitoring requirements have been revised to 1/month at Outfall 3IB00016004, Outfall 3IB00016094, and Intake 3IB00016800.

The monitoring requirements for pH, total residual chlorine, and chlorination/bromination duration have been changed to 1/day at outfalls 3IB00016004 and 3IB00016094.

Selenium is being removed from Intake Station 3IB00016800 because the effluent sampling data support that this parameter does not have the reasonable potential to contribute to WQS exceedances.

In Part II of the permit, special conditions are included that address stormwater compliance; downstream public water supply notification; and Section 316(b) intake structure.

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## PROCEDURES FOR PARTICIPATION IN THE FORMULATION OF FINAL DETERMINATIONS

The draft action shall be issued as a final action unless the Director revises the draft after consideration of the record of a public meeting or written comments, or upon disapproval by the Administrator of the U.S. Environmental Protection Agency.

Within thirty days of the date of the Public Notice, any person may request or petition for a public meeting for presentation of evidence, statements or opinions. The purpose of the public meeting is to obtain additional evidence. Statements concerning the issues raised by the party requesting the meeting are invited. Evidence may be presented by the applicant, the state, and other parties, and following presentation of such evidence other interested persons may present testimony of facts or statements of opinion.

Requests for public meetings shall be in writing and shall state the action of the Director objected to, the questions to be considered, and the reasons the action is contested. Such requests should be emailed to [HClerk@epa.ohio.gov](mailto:HClerk@epa.ohio.gov) or mailed to:

**Legal Records Section  
Ohio Environmental Protection Agency  
P.O. Box 1049  
Columbus, Ohio 43216-1049**

Interested persons are invited to submit written comments upon the discharge permit. Comments should be submitted by email to [epa.dswcomments@epa.ohio.gov](mailto:epa.dswcomments@epa.ohio.gov) (preferred method) or by mail no later than 30 days after the date of this Public Notice. Deliver or mail all comments to:

**Ohio Environmental Protection Agency  
Attention: Division of Surface Water  
Permits Processing Unit  
P.O. Box 1049  
Columbus, Ohio 43216-1049**

The Ohio EPA permit number and Public Notice numbers should appear on each page of any submitted comments. All comments received no later than 30 days after the date of the Public Notice will be considered.

Citizens may conduct file reviews regarding specific companies or sites. Appointments are necessary to conduct file reviews, because requests to review files have increased dramatically in recent years. The first 250 pages copied are free. For requests to copy more than 250 pages, there is a five-cent charge for each page copied. Payment is required by check or money order, made payable to Treasurer State of Ohio.

For additional information about this fact sheet or the draft permit, contact Delaney Boggins at (330) 963-1110 or [Delaney.Boggins@epa.ohio.gov](mailto:Delaney.Boggins@epa.ohio.gov).

## INFORMATION REGARDING CERTAIN WATER QUALITY BASED EFFLUENT LIMITS

This draft permit may contain proposed water-quality-based effluent limits (WQBELs) for parameters that **are not** priority pollutants. (See the following link for a list of the priority pollutants: [https://epa.ohio.gov/static/Portals/35/pretreatment/Pretreatment\\_Program\\_Priority\\_Pollutant\\_Detection\\_Limits.pdf](https://epa.ohio.gov/static/Portals/35/pretreatment/Pretreatment_Program_Priority_Pollutant_Detection_Limits.pdf) . In accordance with ORC 6111.03(J)(3), the Director established these WQBELs after considering, to the extent consistent with the Federal Water Pollution Control Act, evidence relating to the technical feasibility and economic reasonableness of removing the polluting properties from those wastes and to evidence relating to conditions calculated to result from that action and their relation to benefits to the people of the state and to

accomplishment of the purposes of this chapter. This determination was made based on data and information available at the time the permit was drafted, which included the contents of the timely submitted NPDES permit renewal application, along with any and all pertinent information available to the Director.

This public notice allows the permittee to provide to the Director for consideration during this public comment period additional site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness for achieving compliance with the proposed final effluent limitations for these parameters. The permittee shall email to [epa.dswcomments@epa.ohio.gov](mailto:epa.dswcomments@epa.ohio.gov) (preferred method) or deliver or mail this information to:

**Ohio Environmental Protection Agency**  
**Attention: Division of Surface Water**  
**Permits Processing Unit**  
**P.O. Box 1049**  
**Columbus, Ohio 43216-1049**

Should the applicant need additional time to review, obtain or develop site-specific pertinent and factual information with respect to the technical feasibility and economic reasonableness of achieving compliance with these limitations, a written request for any additional time shall be sent to the above address no later than 30 days after the Public Notice Date on Page 1.

Should the applicant determine that compliance with the proposed WQBELs for parameters other than the priority pollutants is technically and/or economically unattainable, the permittee may submit an application for a variance to the applicable WQS used to develop the proposed effluent limitation in accordance with the terms and conditions set forth in OAC 3745-33-07(D). The permittee shall submit this application to the above address no later than 30 days after the Public Notice Date.

Alternately, the applicant may propose the development of site-specific WQS pursuant to OAC 3745-1-39. The permittee shall submit written notification regarding their intent to develop site specific WQS for parameters that are not priority pollutants to the above address no later than 30 days after the Public Notice Date.

## LOCATION OF DISCHARGE/RECEIVING WATER USE CLASSIFICATION

The Energy Harbor Perry Nuclear Power Plant (Perry Nuclear Power Plant) discharges to Lake Erie at Lake Mile 1150.6. Figure 1 shows the approximate location of the facility.

Lake Erie is designated for the following uses under Ohio's WQS (OAC 3745-1-31): Exceptional Warmwater Habitat, General High Quality Water, Agricultural Water Supply, Industrial Water Supply, Bathing Waters, Public Water Supply.

Use designations define the goals and expectations of a waterbody. These goals are set for aquatic life protection, recreation use and water supply use, and are defined in the Ohio WQS (OAC 3745-1-07). The use designations for individual waterbodies are listed in rules -08 through -32 of the Ohio WQS. Once the goals are set, numeric WQS are developed to protect these uses. Different uses have different water quality criteria.

Use designations for aquatic life protection include habitats for coldwater fish and macroinvertebrates, warmwater aquatic life and waters with exceptional communities of warmwater organisms. These uses all meet the goals of the federal CWA. Ohio WQS also include aquatic life use designations for waterbodies which cannot meet the CWA goals because of human-caused conditions that cannot be remedied without causing fundamental changes to land use and widespread economic impact. The dredging and clearing of some small streams to support agricultural or urban drainage is the most common of these conditions. These streams are given Modified Warmwater or Limited Resource Water designations.

Recreation uses are defined by the depth of the waterbody and the potential for wading or swimming. Uses are defined for bathing waters, swimming/canoeing (Primary Contact Recreation) and wading only (Secondary Contact which are generally waters too shallow for swimming or canoeing).

Water supply uses are defined by the actual or potential use of the waterbody. Public Water Supply designations apply near existing water intakes so that waters are safe to drink with standard treatment. Most other waters are designated for agricultural water supply and industrial water supply.

## FACILITY DESCRIPTION

The Perry Nuclear Power Plant has an operating capacity of 1,260 megawatt (MW). The facility, situated on 1,100-acres along the Lake Erie shoreline, began operations in 1987. The facility uses a single boiling water reactor (BWR) for electricity generation. In a BWR, the reactor core heats water which turns to steam. The steam is directly used to drive a turbine for electric generation, after which it is cooled in a condenser and converted back to liquid water. This water is then returned to the reactor core completing the loop.

The process operations at Perry Nuclear Power Plant are classified in the Standard Industrial Classification (SIC) category 4911, Electric Services. The process wastewaters generated from these operations are regulated under 40 CFR 423, "Steam Electric Power Generating Point Source Category", Subpart 423.15 "New Source Performance Standards (NSPS)". The Steam Electric Power Generating effluent guidelines apply to "...discharges resulting from the operation of a generating unit by an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel (coal, oil, or gas) or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium."

Waste streams generated at a power plant typically consist of the following:

**Condenser Cooling Water:** A constant flow of cooling water is required to maintain steam condensation and a low pressure in the condenser. Plants typically use either once-through cooling water systems or recirculating

cooling water systems to condense the steam from the process. In once-through cooling water systems, the cooling water is withdrawn from a body of water, flows through the condenser, and is discharged back to the body of water. A recirculating cooling system recirculates the cooling water required to maintain steam condensation and a low pressure in the condenser. Fresh water is periodically added to the cooling water system to make up for evaporative losses. To prevent minerals from building up to unacceptable levels in the recirculating system, a volume of water must be discharged periodically to purge the minerals from the system, which is referred to as “cooling tower blowdown.”

Low Volume Wastes: As defined by the effluent guidelines, low volume wastes (LVW) include a variety of waste streams, such as wastewater associated with wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, and recirculating house service water systems.

The industrial process and non-process water sources at the facility include the following:

- Non-contact cooling water (once-through and non-recirculating cooling tower blowdown)
- Water treatment building process wastes (Reverse Osmosis (RO) reject, filter backwash, etc.)
- Other service waters

The Perry Nuclear Power Plant has 4 final outfalls (3IB00016004, -005, -006, and -007); a fictitious station, Outfall 3IB00016094, is used to represent discharges from Outfall 3IB00016004 whenever the facility is performing effluent chlorination/bromination for periods exceeding 120 minutes/day. In addition, two internal stations discharge LVW to Outfall 3IB00016004. Figure 2 provides a flow schematic of the wastewater sources and supplies associated with Perry Nuclear Plant. Process wastewater is treated by the following processes:

- Neutralization
- Ion exchange
- Chlorination and dechlorination

The primary outfall, Outfall 3IB00016004, discharges to Lake Erie via a 2129 ft. discharge tunnel. Outfalls 3IB00016005, -006, and -007 are stormwater outfalls.

Consistent with 40 CFR 122.45(h), the current permit includes monitoring and limits at internal stations 3IB00016601 and 3IB00016603. Effluent guideline limits are applied at these LVW stations to ensure that treatment standards are met prior to combining with other waste streams. If monitoring was not done at these locations, it would not be possible to verify compliance with the standards due to dilution. Federal rules at 40 CFR 125.3(f) prohibit attaining these standards by dilution. (Note: Internal Station 3IB00016601 is currently inactive. However, the permittee has requested that the station remain in the NPDES permit).

Perry Nuclear Power Plant obtains water from Lake Erie for the majority of its process operations, including cooling water. As such, CWA Section 316(b) cooling water intake regulations apply to this facility. Potable water for the facility is supplied by Lake County Department of Utilities.

Perry Nuclear Plant is covered under the following additional permits: Air PTIO permit P0111998 and RCRA Hazardous Waste permit OHD025673518.

## DESCRIPTION OF EXISTING DISCHARGE

Table 1 highlights the primary outfalls, internal monitoring stations, wastewater sources, treatment processes, discharge/receiving waterbody and associated flows at Perry Nuclear Power Plant. The current permitted flowrate of 88.23 MGD at Outfall 3IB00016004 remains representative of the discharge and, therefore, was used in the wasteload allocation.

Sanitary waste is discharged to the Lake County Madison Wastewater Treatment Plant collection system and, therefore, is not subject to the requirements of this permit.

The average flow rates for Outfall 3IB00016004 during the previous 5 years are shown in Table 2.

Table 3 presents data compiled from the NPDES permit renewal application Form 2C for Outfall 3IB00016004 and Intake Station 3IB00016800.

Table 4 presents a summary of unaltered Discharge Monitoring Report (DMR) data for the period, January 2018 to December 2022. The current permit limits are provided for comparison.

Table 5 summarizes the chemical specific data for Outfall 3IB00016004 by presenting the average and maximum PEQ values.

## ASSESSMENT OF IMPACT ON RECEIVING WATERS

The Perry Nuclear Power Plant discharges to Lake Erie via a submerged outfall 2,129 feet offshore and at a depth of greater than three meters, and therefore discharges to the Lake Erie Central Basin Open Waters assessment unit. Based on data from the last five years, the Central Basin Open Waters is in full attainment of its drinking water and recreation uses but is impaired for fish consumption (PCBs in fish tissue). The aquatic life use of the open waters has not been assessed.

The *Ohio 2022 Integrated Water Quality and Assessment Report* lists the Central Basin Shoreline as impaired for aquatic life due to eutrophication/nutrient enrichment but there are no numeric targets associated with this impairment. Ohio EPA has convened a multidisciplinary workgroup comprising agency staff and university researchers to reevaluate the aquatic life uses of Lake Erie and nutrients are being considered in that effort. That effort will be reevaluating the metrics, status, and causes/sources for the aquatic life use in all Lake Erie assessment units. The outcome of that workgroup will be available for future evaluations of Lake Erie.

The Central Basin Shoreline is also listed as impaired for recreation (*E. coli*), and fish consumption (PCBs in fish tissue) uses. Overall, the discharge from the Perry Nuclear Power Plant does not appear to be a significant contributor to the non-attainment within the Lake Erie Central Basin.

The full Integrated Report is available through the Ohio EPA, Division of Surface Water website at:

<https://epa.ohio.gov/divisions-and-offices/surface-water/reports-data/ohio-integrated-water-quality-monitoring-and-assessment-report>

## DEVELOPMENT OF WATER-QUALITY-BASED EFFLUENT LIMITS

Determining appropriate effluent concentrations is a multiple-step process in which parameters are identified as likely to be discharged by a facility, evaluated with respect to Ohio water quality criteria, and examined to determine the likelihood that the existing effluent could violate the calculated limits.

## Parameter Selection

Effluent data for the Perry Nuclear Plant were used to determine what parameters should undergo WLA. The parameters discharged are identified by the data available to Ohio EPA DMR data submitted by the permittee, compliance sampling data collected by Ohio EPA, and any other data submitted by the permittee, such as priority pollutant scans required by the NPDES application or by pretreatment, or other special conditions in the NPDES permit. The sources of effluent data used in this evaluation are as follows:

Self-monitoring data (DMR)	January 2018 - December 2022
NPDES application Form 2C data	2022

## Statistical Outliers and Other Non-representative Data

This data is evaluated statistically, and PEQ values are calculated for each pollutant. Average PEQ ( $PEQ_{avg}$ ) values represent the 95<sup>th</sup> percentile of monthly average data, and maximum PEQ ( $PEQ_{max}$ ) values represent the 95<sup>th</sup> percentile of all data points (see Table 5).

The PEQ values are used according to Ohio rules to compare to applicable WQS and allowable WLA values for each pollutant evaluated. Initially, PEQ values are compared to the applicable average and maximum WQS. If both PEQ values are less than 25 percent of the applicable WQS, the pollutant does not have the reasonable potential to cause or contribute to exceedances of WQS, and no WLA is done for that parameter. If either  $PEQ_{avg}$  or  $PEQ_{max}$  is greater than 25 percent of the applicable WQS, a WLA is conducted to determine whether the parameter exhibits reasonable potential and needs to have a limit or if monitoring is required (see Table 6).

For more information on PEQ calculations, see Modeling Guidance #1 at the following webpage: <https://epa.ohio.gov/static/Portals/35/guidance/model1.pdf>.

## Wasteload Allocation

For those parameters that require a WLA, the results are based on the uses assigned to the receiving waterbody in OAC 3745-1. Dischargers are allocated pollutant loadings/concentrations based on the Ohio WQS (OAC 3745-1). Most pollutants are allocated by a mass-balance method because they do not degrade in the receiving water.

WLAs for direct discharges to lakes are done using the following equation for average criteria:  $WLA = (11 \times \text{Water Quality Criteria}) - (10 \times \text{Background Concentration})$ . Allocations for maximum criteria are set equal to the Inside Mixing Zone Maximum (IMZM) values.

Allocations are developed using a percentage of stream design flow as specified in Table 7, and allocations cannot exceed the Inside Mixing Zone Maximum (IMZM) criteria.

The data used in the WLA are listed in Table 6 and Table 7. The WLA results to maintain all applicable criteria are presented in Table 8.

## REASONABLE POTENTIAL/EFFLUENT LIMITS/MANAGEMENT DECISIONS

After appropriate effluent limits are calculated, the reasonable potential of the discharger to violate the WQS must be determined. Each parameter is examined and placed in a defined "group". Parameters that do not have a WQS or do not require a WLA based on the initial screening are assigned to either group 1 or 2. For the allocated parameters, the preliminary effluent limits (PEL) based on the most restrictive average and maximum WLAs are selected from Table 8. The average PEL ( $PEL_{avg}$ ) is compared to the average PEQ ( $PEQ_{avg}$ ) from Table 5, and the  $PEL_{max}$  is compared to the  $PEQ_{max}$ . Based on the calculated percentage of the allocated value [ $(PEQ_{avg} \div$

$PEL_{avg} \times 100$ , or  $(PEQ_{max} \div PEL_{max}) \times 100$ ], the parameters are assigned to group 3, 4, or 5. The groupings are listed in Table 9.

The final effluent limits are determined by evaluating the groupings in conjunction with other applicable rules and regulations. Table 10 presents the final effluent limits and monitoring requirements proposed for Perry Nuclear Plant outfall(s) 3IB00016004/094, and internal monitoring stations 3IB00016601 and 3IB00016603 and the basis for their recommendation. Unless otherwise indicated, the monitoring frequencies proposed in the permit are continued from the existing permit.

## **Outfall 3IB00016004**

### ***Flow Rate and Temperature***

Monitoring for temperature and flow rate are proposed to continue to evaluate performance of the facility.

### ***pH***

Limits proposed for pH are based on Water Quality Standards ((OAC 3745-1-35).

### ***Total Residual Chlorine and Total Residual Oxidants/Bromine***

The daily maximum limit for total residual chlorine (TRC) and the duration of chlorine discharge, based on the New Source Performance Standards (NSPS) in 40 CFR 423.15 (b)(9), are being continued. The TRC limit is based on an analysis of the inside-mixing-zone maximum WQS when discharges of chlorine are limited to two hours per day. This information indicates that WQS can be significantly higher for a two hour per day exposure than when organisms are exposed for 48 - 96 hours, as is typical of most acute aquatic toxicity tests. The 120-minute duration limit regulates the exposure time so that chlorine levels will not result in adverse downstream impacts. Because TRC represents all chlorine species dissolved in water, monitoring for free available chlorine is not necessary.

Effluent limits on total residual oxidants reflect the use of bromine and bromine/chlorine mixtures for control of biofouling in the cooling system. Previously, continuous discharges of these pollutants were regulated through the imposition of effluent limits based on water quality criteria for chlorine (OAC 3745-01-35). Effluent limits for bromine were developed based on the chlorine criteria and conclusions of the 1991 Chemical Manufacturers Association (CMA) study, which determined that bromine is approximately four times more toxic than chlorine. At the request of the utility companies, Ohio EPA developed time-specific water quality criteria. These allowed less stringent limits for chlorine/bromine when used for less than 120 minutes (2 hours) per day. The intermittent limits were based on an Ohio EPA study of the inside mixing zone maximum (IMZM) when aquatic life is exposed to chlorine for less than 120 minutes (2 hours) per day.

On April 9, 2021, Ohio EPA published Tier II criteria for bromine (see Table 6), establishing maximum limits that are significantly lower than those supported by the CMA study. While no specific study has been conducted which analyzes the IMZM for intermittent exposures to bromine, Ohio EPA believes it is appropriate to extend the relief allowed by the previous intermittent limits when bromine is used for less than 120 minutes (2 hours) per day. Consistent with the approach used for chlorine, a new procedure was developed for calculating less stringent daily maximum bromine limits for facilities that may discharge bromine. Thus, the limit for bromine (aka total residual oxidants) is determined by multiplying the IMZM value for bromine by the ratio of the total residual chlorine IMZM values for continuous and intermittent (<120 min/day) use.

At the current time, it is understood by Ohio EPA that an analytical method is not approved under 40 CFR 136 to comply with NPDES permit limits for bromine. Because the existing analytical methods do not easily distinguish between bromine and chlorine, limits for bromine are listed under the parameter code for “Total Residual Oxidants” (TRO). The permit requires the permittee to report daily results for TRC when “only chlorine” is used as a biocide, and reports TRO when bromine or bromine/chlorine mixtures are used.

### ***Mercury***

The Ohio EPA risk assessment (Table 9) places mercury in group 5. This placement, as well as the data in Tables 4-6, indicates that the reasonable potential to exceed WQS exists and limits are necessary to protect water quality. For this parameter, the PEQ is greater than 100 percent of the WLA. Pollutants that meet this requirement must have permit limits under OAC 3745-33-07(A)(1).

The existing NPDES permit includes a variance-based limit of 7.0 ng/L for mercury. Based on available monitoring data and new application information, Perry Nuclear Power Plant has determined that the facility cannot meet the 30-day average permit limit of 1.3 ng/L. However, the effluent data shows that the facility can meet the mercury annual average value of 12 ng/L. The facility submitted information supporting the renewal of the variance. The Pollutant Minimization Program (PMP) schedule developed from the original variance continues to be implemented, and further reductions in mercury may be possible.

Ohio EPA has reviewed the mercury variance information and permittee’s application and has determined that the requirements of the OAC are met. The permittee has also demonstrated to the satisfaction of Ohio EPA that there is no readily apparent means of complying with the WQBEL without constructing prohibitively expensive end-of-pipe controls for mercury. Based upon these demonstrations, the facility is eligible for renewal of the mercury variance under OAC 3745-1-38(H).

A condition in Part II of the NPDES permit lists the provisions of the mercury variance renewal, and includes the following requirements:

- A lower variance-based monthly average effluent limit of 6.4 ng/L, based on the review of the facility’s monitoring data, i.e. PEQ data. The PEQ<sub>max</sub> was utilized in lieu of the PEQ<sub>avg</sub> to account for the presence of mercury due to external sources, e.g. in the intake source water. The monitoring frequency has been increased to monthly.
- A requirement that the permittee make reasonable progress to meet the WQBEL for mercury by implementing the plan of study, which has been developed as part of the PMP;
- Low-level mercury monitoring of the plant’s influent and effluent;
- A requirement that the annual average mercury effluent concentration is less than or equal to 12 ng/L as specified in the plan of study;
- A requirement to submit an annual report on implementation of the PMP; and
- A requirement for submittal of a certification stating that all permit conditions related to implementing the plan of study and the PMP have been satisfied, but that compliance with the monthly average WQBEL for mercury has not been achieved.

### ***Copper***

The Ohio EPA risk assessment (Table 9) places copper in group 4. This placement support that this parameter does not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. Monitoring for Group 4 pollutants (where PEQ exceeds 50 percent of the WLA), is required by OAC 3745-33-07(A)(2). However, the “Method A” PEQ calculation is this particular instance appears to over-represent the level of the parameter in the discharge. The PEQ is based on a single reported

analytical value of 4.35 µg/L in the NPDES permit application; the corresponding intake value was 4.10 µg/L. The applicable IMZM WQBEL is 34 µg/L.

Based on this additional analysis, copper does not appear to have the reasonable potential to contribute to WQS exceedances. Using the discretion allowed the Director under OAC 3745-33-07(A)(6), no new monitoring requirements are proposed.

***Aluminum, Arsenic, Barium, Boron, Bromine, Chromium, Fluoride, Iron, Lead, Manganese, Nickel, Nitrate-N + Nitrite-N***

The Ohio EPA risk assessment (Table 9) places these parameters in groups 2 and 3. This placement supports that these parameters do not have the reasonable potential to contribute to WQS exceedances, and limits are not necessary to protect water quality. No new monitoring requirements are proposed.

#### **Fictitious Outfall 3IB00016094**

All limits, except TRC and TRO, at this outfall are the same as Outfall 3IB00016004. Because this outfall allows chlorination/bromination to occur for periods greater than 2 hours/day, the TRC and TRO limits are based on the WLA.

#### **Internal Monitoring Stations 3IB00016601 and 3IB00016603**

##### ***Oil and Grease and Total Suspended Solids***

The limits for total suspended solids (TSS) and oil and grease are based on federal effluent limitation guidelines (ELGs) for Low Volume wastewaters found in 40 CFR Part 423 and are based on available treatment technology (see Attachment 1). Federal and State laws and regulations require that dischargers meet both the ELGs and any more stringent standards needed to comply with state WQS. Permit limits are based on the more stringent of the two. In the case of oil and grease, the applicable TBELs are protective of water quality at the final outfall.

##### ***Flow Rate, pH, and Total Filterable Residue (aka Total Dissolved Solids)***

Monitoring is recommended to continue for these parameters; total filterable residue monitoring is only required for Station 3IB00016603. The ELG pH limits, i.e. 6.0 - 9.0, are not required at these internal stations; the WQBELs applied at the final outfall are protective of the pH criteria.

#### **Additional Monitoring Requirements**

Additional monitoring requirements proposed at the final effluent, influent and upstream/downstream stations are included for all facilities in Ohio and vary according to the type and size of the discharge. In addition to permit compliance, this data is used to assist in the evaluation of effluent quality and treatment plant performance and for designing plant improvements and conducting future stream studies.

##### ***Intake Monitoring***

Continued monitoring of the following intake parameters are recommended at Station 3IB00016800: flow rate, temperature, and mercury. The monitoring frequency for mercury has been increased to monthly to match the requirement at Outfall 3IB00016004. The existing selenium data support that the parameter does not pose a risk to the environment and, therefore, monitoring is no longer required.

## **OTHER REQUIREMENTS**

### **Cooling Water Intake Structure Compliance**

Under Section 316(b) of the federal CWA, cooling water intake structures (CWISs) are required to use best technology available (BTA) to minimize adverse environmental impact resulting from the operation of the intake. New rules were promulgated on October 14, 2014, and facilities with permits that expire after July 18, 2018 must be in compliance with the new rules. The CWIS is considered an existing unit at an existing facility and therefore must comply with 40 CFR 125, Subpart J. Information supplied by the permittee in July 2016 regarding the CWIS, and other pertinent data, included the following:

- Design intake flow rate (DIF) - 101.5 MGD.
- Maximum design intake flow rate of pumps - 33.8 MGD (4 total intake pumps, up to 3 operating)
- Percentage of intake flow rate used for cooling purposes - >25% is used cooling water purposes
- Closed-cycle cooling tower which achieves a 93% reduction in withdrawal rate (i.e. 101.5 MGD compared to original once-through design rate of approximately 1,656 MGD).
- Through-screen design intake velocity - 0.23 feet per second (fps) at the end cap.
- Impingement data used from Eastlake Power Station, Ashtabula C Power Plant, and Davis-Besse Nuclear Power Station reports.
- Entrainment data used from Eastlake Power Station, Ashtabula A&B, and Ashtabula C reports.
- Operation of the cooling water system - year-round with the exception of maintenance shut-downs and scheduled outages every 24 months.
- Description of screens, technologies, and operations measures used to reduce impingement and entrainment – Water is withdrawn from two structures with end caps, located approximately 2,650 feet offshore. Intake water passes through two 8-foot wide traveling screens, 3/8” square mesh openings, and 14 gauge Washburn & Moen screen. Screen wash pumps supply water from the service water discharge line to clean screens.

Ohio EPA has determined that the CWIS represents BTA in accordance with Section 316(b) of the CWA. This conclusion has been reached based on the utilization of a closed-cycle recirculating cooling system to reduce flow and a through-screen intake velocity of less than 0.5 feet per second. Perry Nuclear Power Plant’s operations are not indicated as contributing to the lake’s impairments.

In order to ensure that the facility remains compliant with Section 316(b), special conditions are included in Part II of the permit.

### **Public Water Supply Notification**

OAC 3745-33-08 requires that permittees discharging wastewater within ten miles of a downstream public water supply intake located on the same waterway must develop and implement notification procedures in conjunction with the downstream public water supply operator in the event of a spill, separate sewer overflow, bypass or upset that reaches waters of the state. Lake County Department of Utilities operates a public water supply intake within ten miles from the Perry Nuclear Power Plant. Hence, Part II of the permit includes a requirement for the permittee to maintain a notification plan for the following:

Lake County Department of Utilities  
Bacon Road Water Treatment Facility East Subdistrict  
1845 Lake Road  
Painesville Township, Ohio 44077

## **Outfall Signage**

Pursuant to OAC 3745-33-08(A), NPDES permits generally include a requirement for the permittee to place and maintain a sign at each outfall providing information about the discharge. Signs are not required at in-plant sampling outfalls or at outfalls that are not accessible to the public by land or by recreational use of the water body. All outfalls at the Perry Nuclear Power Plant meet the signage exemption.

## **Part III**

Part III of the permit details standard conditions that include monitoring, reporting requirements, compliance responsibilities, and general requirements.

## **Stormwater Compliance**

Parts IV, V, and VI have been included with the draft permit to ensure that any stormwater flows from the facility are properly regulated and managed. As an alternative to complying with Parts IV, V, and VI, the Perry Nuclear Power Plant may seek permit coverage under the general permit for industrial stormwater (permit # OHR000007) or submit a “No Exposure Certification.” Parts IV, V, and VI will be removed from the final permit if: 1) the permittee submits a Notice of Intent (NOI) for coverage under the general permit for industrial stormwater or submits a No Exposure Certification, 2) Ohio EPA determines that the facility is eligible for coverage under the general permit or meets the requirements for a No Exposure Certification, and 3) the determination by Ohio EPA can be made prior to the issuance of the final permit.

Figure 1. Location of Perry Nuclear Power Plant

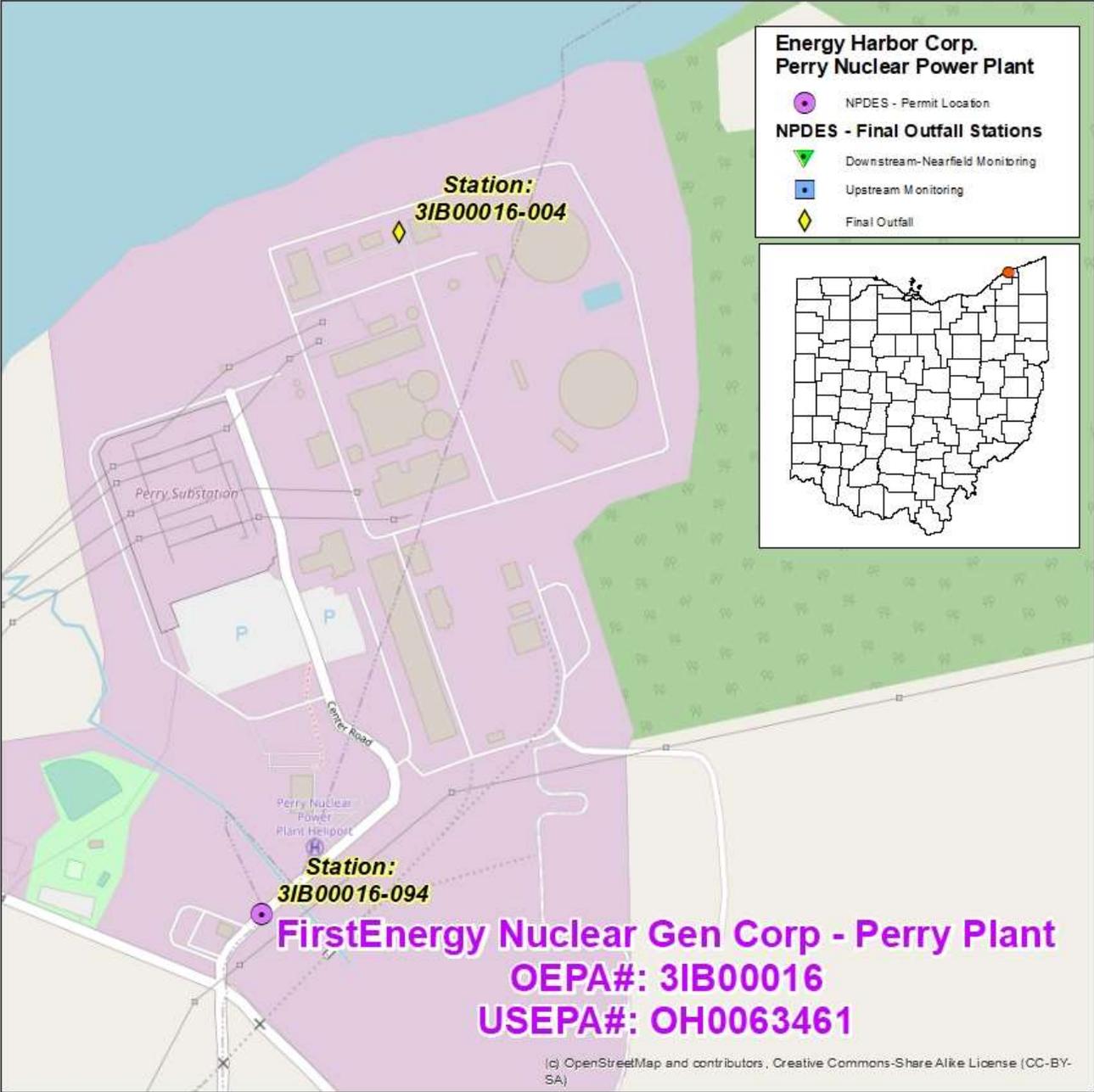
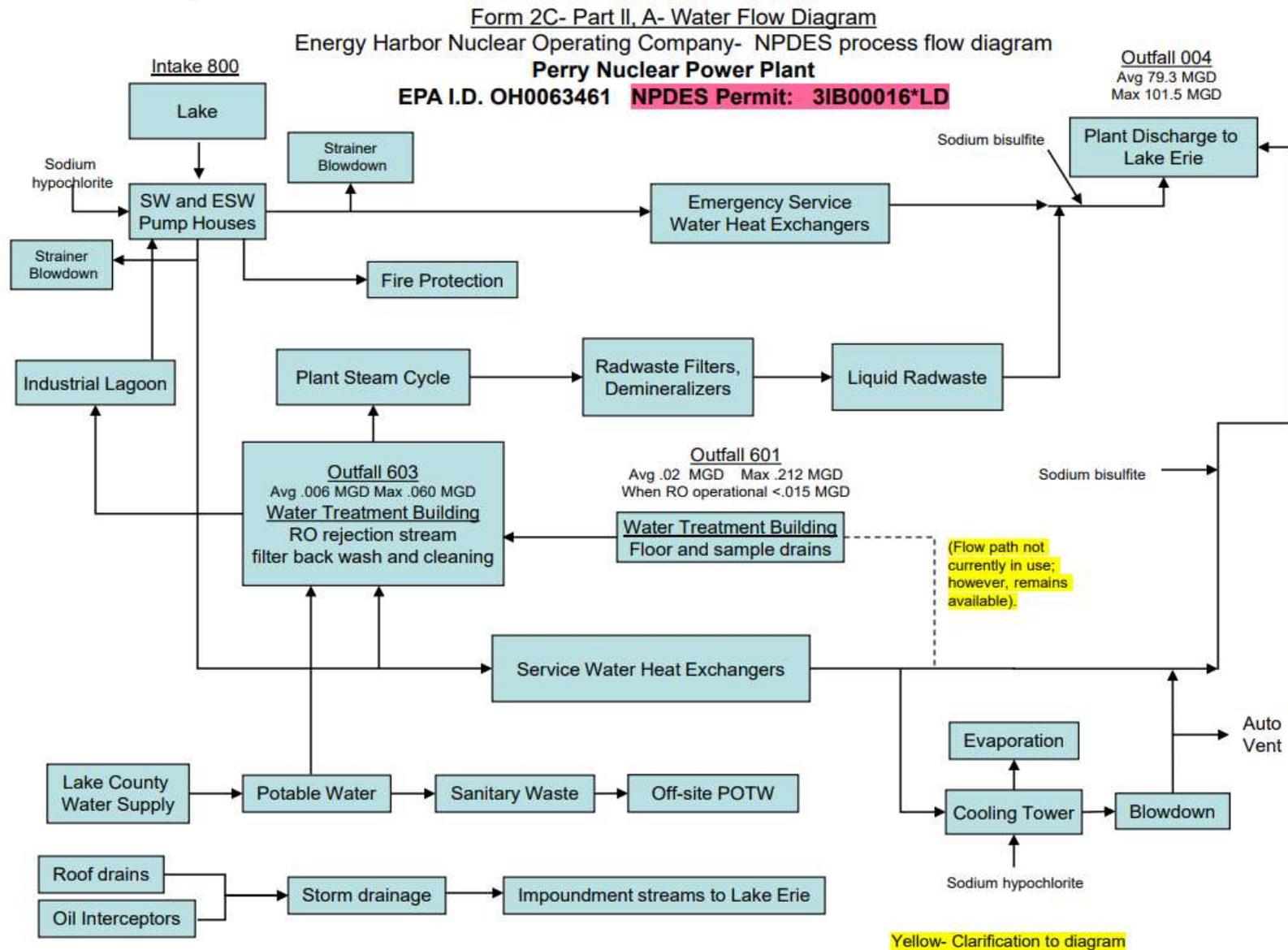


Figure 2. Water Balance Diagram



**Table 1. Monitoring Stations, Wastewater Sources, Treatment Processes, Discharge Points, and Flow Rates**

<b>Outfall/Station</b>	<b>Wastewater Source</b>	<b>Treatment Utilized</b>	<b>Discharge/ Receiving Stream</b>	<b>Average Flow Rate (MGD)</b>
3IB00016004	Final Outfall	Chlorine Treatment Dechlorination	Lake Erie	88.23
3IB00016094*	Fictitious Final Outfall	Chlorine Treatment Dechlorination	Lake Erie	88.23
3IB00016005	Stormwater	Impoundment	Lake Erie	Intermittent
3IB00016006	Stormwater	Impoundment	Lake Erie	Intermittent
3IB00016007	Stormwater	Impoundment	Lake Erie	Intermittent
3IB00016601	Regenerant/ Neutralization	Neutralization	Outfall 3IB00016004	0.02
3IB00016603	RO Reject Water	Reverse Osmosis	Outfall 3IB00016004	0.006

\* 3IB00016094 is authorized for use when the duration of high-rate disinfection exceeds 120 minutes.

**Table 2. Annual Effluent and Intake Flow Rates**

Outfall/Station	Flow Rate (Million Gallons per Day)					
	Year	# Observations	Average	Median	95th Percentile	Maximum
31B00016004	2018	365	70.51	62.90	94.00	112.90
	2019	365	76.71	71.70	104.20	140.40
	2020	366	69.57	62.20	91.65	107.50
	2021	365	68.59	65.70	89.30	101.40
	2022	365	61.86	56.50	89.70	106.10
31B00016603	2018	244	0.0074	0.0053	0.0208	0.0558
	2019	296	0.0146	0.0078	0.0443	0.2190
	2020	269	0.0071	0.0050	0.0189	0.0387
	2021	266	0.0084	0.0042	0.0303	0.0747
	2022	278	0.0087	0.0054	0.0269	0.0440
31B00016800 (Intake)	2018	306	82.82	71.15	106.68	141.90
	2019	365	83.47	73.60	116.78	144.60
	2020	366	80.89	68.75	106.50	134.40
	2021	365	86.47	83.80	117.60	154.10
	2022	365	82.39	69.50	110.76	141.40

MGD = million gallons per day

**Table 3. Effluent and Intake Characterization Based on Form 2C Data**

Parameter	Units	Concentration		No. of Analyses
		31B00016004	31B00016800	
Fluoride	mg/L	0.12	0.083	1
Nitrate+Nitrite (N)	mg/L	0.29	0.19	1
Phosphorus	mg/L	0.12	0.044	1
Sulfate	mg/L	30	21	1
Aluminum	µg/L	642	443	1
Barium	µg/L	29.9	23.2	1
Boron	µg/L	36.4	28.5	1
Iron	µg/L	762	446	1
Manganese	µg/L	19.3	11.3	1
Titanium	µg/L	23.1	24.7	1
Arsenic	µg/L	1.55	1.18	1
Chromium	µg/L	1.96	1.53	1
Copper	µg/L	4.35	4.1	1
Lead	µg/L	0.8	0.59	1
Nickel	µg/L	2.07	2.1	1
Zinc	µg/L	10.9	8.35	1

**Table 4. Effluent and Intake Characterization Using Self-Monitoring Data**

Outfall/Station	Parameter	Unit	Current Limits		# Observations	Percentiles		Data Range
			30 Day	Daily		50th	95th	
<b>3IB00016004</b>	Water Temperature	°F	Monitor		1826	67	86	37 - 91
	pH	S.U.	--	6.5 - 9.0	528	8.5	8.75	7.51 - 8.98
	Flow Rate	MGD	Monitor		1826	63.6	94.1	47.6 - 140
	Chlorine, Total Residual	mg/L	--	0.2	1796	< .05	< .05	0 - .2
	Mercury, Total - 2021-2022	kg/day	0.0023	0.57	8	.00019	.000337	.0000751 - .000337
	Mercury, Total - 2018-2020	kg/day	0.00043	0.57	12	.000285	.00106	0 - .00132
	Mercury, Total - 2018-2020	ng/L	1.3	1700	12	1.15	5.09	0 - 6.1
	Mercury, Total - 2021-2022	ng/L	7.0	1700	8	.9	1.6	.35 - 1.7
	Chlorination/Bromination Duration	Minutes	--	120	1797	110	110	30 - 116
<b>3IB00016603 (Internal)</b>	pH	S.U.	Monitor		125	8.08	8.27	7.16 - 8.36
	Total Suspended Solids	mg/L	30	100	120	< 4	4	0 - 7
	Oil and Grease, Total	mg/L	15	20	121	< 1.4	2.5	0 - 5.1
	Flow Rate	MGD	Monitor		1353	.00553	.0285	.00001 - .219
	Residue, Total Filterable	mg/L	Monitor		23	740	917	550 - 1200
<b>3IB00016800 (Intake)</b>	Water Temperature	°F	Monitor		1826	54	79	34 - 83
	Selenium, TR	µg/L	Monitor		20	--	--	< .89
	Flow Rate	MGD	Monitor		1767	71.8	115	63.5 - 154
	Mercury, Total	ng/L	Monitor		20	.76	2.89	0 - 4.5

\* = For pH minimum and dissolved oxygen, 5th percentile shown in place of 95th percentile.

TR = Total Recoverable

w = weekly average

m = Minimum limit

**Table 5. Projected Effluent Quality for Outfall 31B00016004**

Parameter	Units	Number of Samples	Number > MDL	PEQ Average	PEQ Maximum
Bromine	µg/L			--	--
Aluminum	µg/L	1	1	2905.7	3980.4
Arsenic - TR	µg/L	1	1	7	9.61
Barium	µg/L	1	1	135.3	185.4
Boron	µg/L	1	1	164.7	225.7
Chlorine, Total Residual	mg/L	1796	54	0.015	0.036
Chromium - TR	µg/L	1	1	8.9	12.2
Copper - TR	µg/L	1	1	19.7	27
Fluoride	mg/L	1	1	0.5	0.7
Iron - TR	µg/L	1	1	3448.8	4724.4
Lead - TR	µg/L	1	1	3.6	5
Manganese - TR	µg/L	1	1	87.4	119.7
Mercury	ng/L	30	27	3.8	6.4
Nickel - TR	µg/L	1	1	9.4	12.8
Nitrate-N + Nitrite-N	mg/L	1	1	1.3	1.8
Phosphorus	mg/L	1	1	0.5	0.7
Sulfates	mg/L	1	1	135.8	186
Titanium	µg/L	1	1	49.3	67.6

MDL = analytical method detection limit  
 PEQ = projected effluent quality  
 TR = total recoverable

**Table 6. Water Quality Criteria in the Study Area**

Parameter	Units	Outside Mixing Zone Criteria					Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average						
		Wildlife	Human Health	Agri-culture	Aquatic Life			
Bromine	mg/L	--	--	--	0.00026	0.0024	0.0048	
Aluminum	µg/L	--	4500	--	--	--	--	
Arsenic - TR	µg/L	--	580	100	150	340	680	
Barium	µg/L	--	160000	--	760	3300	6500	
Boron	µg/L	--	200000	--	3900	33000	65000	
Chlorine, Total Residual	mg/L	--	--	--	0.011	0.019	0.038	
Chromium - TR	µg/L	--	14000	100	100	2100	4200	
Copper - TR	µg/L	--	64000	500	11	17	34	
Fluoride	mg/L	--	--	2	--	--	--	
Iron - TR	µg/L	--	--	5000	--	--	--	
Lead - TR	µg/L	--	--	100	8.3	160	320	
Manganese - TR	µg/L	--	61000	--	--	--	--	
Mercury	ng/L	1.3	3.1	10000	910	1700	1700	
Nickel - TR	µg/L	--	43000	200	62	560	1100	
Nitrate-N + Nitrite-N	mg/L	--	--	100	--	--	--	
Phosphorus	mg/L	--	--	--	--	--	--	
Sulfates	mg/L	--	--	--	--	--	--	
Titanium	µg/L	--	--	--	--	--	--	

TR = total recoverable

**Table 7. Instream Conditions and Discharger Flow**

Parameter	Units	Season	Value	Basis
<i>Hardness, OMZ</i>	mg/L	annual	122	EA3; Lake Erie Ambient Station 301254 - Geneva North; 2011-2013; n=7; Mean Value
<i>Hardness, IMZ</i>	mg/L	annual	122	
<b><i>Perry Nuclear flow (Outfall 31B00016004)</i></b>	cfs (MGD)	annual	136.51 (88.23)	Existing NPDES permit
<b><i>Background Water Quality</i></b>				
Bromine	µg/L		0	No representative data available.
Aluminum	µg/L		0	EA3; 2011-2013; n=6; 6<MDL; Station 301255
Arsenic - TR	µg/L		0	EA3; 2011-2013; n=6; 6<MDL; Station 301255
Barium	µg/L		21.8	EA3; 2011-2013; n=6; 0<MDL; Station 301255; Mean Value
Boron	µg/L		0	No representative data available.
Chlorine, Total Residual	mg/L		0	No representative data available.
Chromium - TR	µg/L		1.6	EA3; 2011-2013; n=6; 5<MDL; Station 301255; Mean Value
Copper - TR	µg/L		0	EA3; 2011-2013; n=6; 6<MDL; Station 301255
Fluoride	mg/L		0	No representative data available.
Iron - TR	µg/L		108.5	EA3; 2011-2013; n=6; 1<MDL; Station 301255; Mean Value
Lead - TR	µg/L		0	EA3; 2011-2013; n=6; 6<MDL; Station 301255
Manganese - TR	µg/L		6.5	EA3; 2011-2013; n=6; 5<MDL; Station 301255; Mean Value
Mercury	ng/L		0	No representative data available.
Nickel - TR	µg/L		1.5	EA3; 2011-2013; n=6; 5<MDL; Station 301255; Mean Value
Nitrate-N + Nitrite-N	mg/L		0.3	EA3; 2011-2022; n=46; 8<MDL; Station 301255; North Median Value
Phosphorus	mg/L		0.01	EA3; 2011-2022; n=45; 7<MDL; Station 301255; Median Value
Sulfates	mg/L		0	No representative data available.
Titanium	µg/L		0	No representative data available.

EA3 = Ohio EPA Ecological Assessment and Analysis Application Database

MDL = analytical method detection limit

n = number of samples

NPDES = National Pollutant Discharge Elimination System

Station 301255 = Lake Erie Ambient Station 301255 - Fairport North

TR = total recoverable

**Table 8. Summary of Effluent Limits to Maintain Applicable Water Quality Criteria (3IB00016004/094)**

Parameter	Units	Outside Mixing Zone Criteria				Maximum Aquatic Life	Inside Mixing Zone Maximum
		Average					
		Wildlife	Human Health	Agri-culture	Aquatic Life		
Bromine	mg/L	--	--	--	0.0029	--	0.0048
Aluminum	µg/L	--	49500	--	--	--	--
Arsenic - TR	µg/L	--	6380	1100	1650	--	680
Barium	µg/L	--	1759782	--	8142	--	6500
Boron	µg/L	--	2200000	--	42900	--	65000
Chlorine, Total Residual	mg/L	--	--	--	0.12	--	0.038
Chromium - TR	µg/L	--	153984	1084	1084	--	4200
Copper - TR	µg/L	--	704000	5500	121	--	34
Fluoride	mg/L	--	--	22	--	--	--
Iron - TR	µg/L	--	--	53915	--	--	--
Lead - TR	µg/L	--	--	1100	91	--	320
Manganese - TR	µg/L	--	670935	--	--	--	--
Mercury	ng/L	1.3	3.1	10000	910	1700	1700
Nickel - TR	µg/L	--	472985	2185	667	--	1100
Nitrate-N + Nitrite-N	mg/L	--	--	1097	--	--	--
Phosphorus	mg/L	--	--	--	--	--	--
Sulfates	mg/L	--	--	--	--	--	--
Titanium	µg/L	--	--	--	--	--	--

TR = total recoverable

**Table 9. Parameter Assessment for Outfall 3IB00016004/3IB00016094**

<b>Group 1:</b>	Due to a lack of numeric criteria, the following parameters could not be evaluated at this time.		
	Phosphorus	Sulfates	Titanium
<b>Group 2:</b>	PEQ < 25 percent of WQS or all data below minimum detection limit. WLA not required. No limit recommended; monitoring optional.		
	Bromine	Arsenic - TR	Barium
	Boron	Chromium - TR	Manganese - TR
	Nickel - TR	Nitrate-N + Nitrite-N	
<b>Group 3:</b>	PEQmax < 50 percent of maximum PEL and PEQavg < 50 percent of average PEL. No limit recommended; monitoring optional.		
	Aluminum	Fluoride	Iron - TR
	Lead - TR		
<b>Group 4:</b>	PEQmax >= 50 percent, but < 100 percent of the maximum PEL or PEQavg >= 50 percent, but < 100 percent of the average PEL. Monitoring is appropriate.		
	Chlorine, Total Residual	Copper - TR	
<b>Group 5:</b>	Maximum PEQ >= 100 percent of the maximum PEL or average PEQ >= 100 percent of the average PEL, or either the average or maximum PEQ is between 75 and 100 percent of the PEL and certain conditions that increase the risk to the environment are present. Limit recommended.		
<b><u>Limits to Protect Numeric Water Quality Criteria</u></b>			
		<b><i>Recommended Effluent Limits</i></b>	
<b><i>Parameter</i></b>	<b><i>Units</i></b>	<b><i>Average</i></b>	<b><i>Maximum</i></b>
Mercury	ng/L	1.3	1700

PEL = preliminary effluent limit  
 PEQ = projected effluent quality  
 TR = total recoverable  
 WLA = wasteload allocation  
 WQS = water quality standard

**Table 10. Final Effluent Limits**

Parameter	Units	Concentration		Loading (kg/day) <sup>a</sup>		Basis <sup>b</sup>
		30 Day Average	Daily Maximum	30 Day Average	Daily Maximum	
<b>Outfall 31B00016004</b>						
Water Temperature	°F	----- Monitor -----				M <sup>c</sup>
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Residual Oxidants	mg/L	--	0.025 <sup>d</sup>	--	--	BTJ
Flow Rate	MGD	----- Monitor -----				M <sup>c</sup>
Chlorine, Total Residual	mg/L	--	0.2	--	--	NSPS
Mercury	ng/L	6.4	1700	0.0021	0.57	VAR
Chlorination/Bromination Duration	Minutes	--	120	--	--	NSPS
<b>Fictitious Outfall 31B00016094</b>						
Water Temperature	°F	----- Monitor -----				M <sup>c</sup>
pH	S.U.	6.5 - 9.0		--	--	WQS
Total Residual Oxidants	mg/L	--	0.0048 <sup>e</sup>	--	--	WLA/IMZM
Flow Rate	MGD	----- Monitor -----				M <sup>c</sup>
Chlorine, Total Residual	mg/L	--	0.038	--	--	WLA/IMZM
Mercury	ng/L	6.4	1700	0.0021	0.57	VAR
<b>Internal Monitoring Station 31B00016601</b>						
pH	S.U.	----- Monitor -----				M <sup>c</sup>
Total Suspended Solids	mg/L	30	100	--	--	NSPS
Oil and Grease	mg/L	15	20	--	--	NSPS
Flow Rate	MGD	----- Monitor -----				M <sup>c</sup>
<b>Internal Monitoring Station 31B00016603</b>						
pH	S.U.	----- Monitor -----				M <sup>c</sup>
Total Suspended Solids	mg/L	30	100	--	--	NSPS
Oil and Grease	mg/L	15	20	--	--	NSPS
Flow Rate	MGD	----- Monitor -----				M <sup>c</sup>
Residue, Total Filterable	mg/L	----- Monitor -----				BTJ

<sup>a</sup> Effluent loadings based on the following flow value: Outfall 31B00016004/094 - 88.23 MGD.

<sup>b</sup> Definitions: BTJ = Best Technical Judgment  
M = Permit Guidance 2: Determination of Sampling Frequency Formula for Industrial Waste Discharges  
NSPS = New Source Performance Standards, 40 CFR 423 Steam Electric Power Category, Cooling Tower Blowdown and Low Volume Wastewater Dischargers  
VAR = Mercury variance (OAC 3745-33-07(D)(10)(a))  
WLA/IMZM = Wasteload Allocation limited by Inside Mixing Zone Maximum  
WQS = Ohio Water Quality Standards (OAC 3745-1)

- ° Monitoring of flow and other indicator parameters is specified to assist in the evaluation of effluent quality and treatment plant performance.
- d Calculated value based on chlorine/bromine IMZM ratio. Criterion applies when bromine or bromine/chlorine mixtures are used.
- ° Criterion applies when bromine or bromine/chlorine mixtures are used.

**Attachment 1. Applicable Federal Effluent Limitation Guidelines**

<b>40 CFR 423.15 - New Source Performance Standards</b>		
<b>Parameter (mg/L)</b>	<b>Daily Maximum</b>	<b>30-Day Average</b>
Low Volume Wastes		
Total Suspended Solids	100.0	30.0
Oil & Grease	20.0	15.0
pH	6.0 to 9.0	
Once Through Cooling Water		
Chlorine, Total Residual	0.2	--
Cooling Tower Blowdown		
Chlorine, Free Available	0.5*	0.2*
Chromium, Total	0.2	0.2
Zinc, Total	1.0	1.0
Other Priority Pollutants	**	**

\* - Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator or state, if the state has NPDES permit issuing authority, that the units in a particular location cannot operate at or below this level of chlorination.

\*\* - There shall be no detectable amount of other priority pollutants contained in chemicals added for cooling tower maintenance. (Note: Ohio EPA has extended the “free from priority pollutants” requirement to also include chromium and zinc.)

**Attachment 2. List of Approved Boiler/Cooling Water System Additives**

<b>Chemical Additive</b>	<b>Purpose</b>
Sodium Hypochlorite	Biological growth control
Nalco 23283 Dynacool 1383 Nalco 3D Trasar 3DT413	Scale inhibitors
FerroQuest LP7202	Scale control
Nalco Trasar [R] 23299	Integrity of sodium bisulfite line
Nalco H150M	Zebra mussel control
Sodium bentonite	Detoxification of zebra mussel residual
Nalco 7465	Anti-foaming agent

## **Addendum 1. Acronyms**

ABS	Anti-backsliding
BAT	Best Available Technology Economically Achievable
BCT	Best Conventional Pollutant Control Technology
BPJ	Best professional judgment
BPT	Best Practicable Control Technology Currently Available
BTJ	Best technical judgment
CFR	Code of Federal Regulations
CONSWLA	Conservative substance wasteload allocation
CWA	Clean Water Act
CWIS	Cooling water intake structure
DMR	Discharge Monitoring Report
DMT	Dissolved metal translator
ELG	Federal effluent limitation guideline
gpm	Gallons per minute
IMZM	Inside mixing zone maximum
MDL	Analytical method detection limit
MGD	Million gallons per day
NPDES	National Pollutant Discharge Elimination System
NSPS	New source performance standards
OAC	Ohio Administrative Code
Ohio EPA	Ohio Environmental Protection Agency
ORC	Ohio Revised Code
ORSANCO	Ohio River Valley Water Sanitation Commission
PEL	Preliminary effluent limit
PEQ	Projected effluent quality
PMP	Pollution Minimization Program
PPE	Plant performance evaluation
SIC	Standard Industrial Classification
TBEL	Technology-based effluent limit
TMDL	Total Daily Maximum Load
TRE	Toxicity reduction evaluation
TU	Toxicity unit
U.S. EPA	United States Environmental Protection Agency
WET	Whole effluent toxicity
WLA	Wasteload allocation
WQBEL	Water-quality-based effluent limit
WQS	Water Quality Standards